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DESIGN FOR MEDICAL BUILDINGS

A Manual for the Planning and Building of Health Care Facilities under Conditions of Limited Resources

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## TABLE OF CONTENTS

<u>INTRODUCTION</u>	pg. 1
<u>CHAPTER ONE - MEDICAL CONTEXT</u>	4
1.1 PARAMETERS	4
1.2 THE RURAL HOSPITAL	5
1.3 ACCOMMODATION REQUIRED	7
<u>CHAPTER TWO - PROJECT PLANNING</u>	10
2.1 THE BRIEF	10
2.2 FEASIBILITY	12
2.3 PROJECT ORGANIZATION	15
2.4 SITE SELECTION	17
<u>CHAPTER THREE - SITE PLANNING</u>	21
3.1 PLANNING METHOD	21
3.2 DESIGN CONSIDERATIONS	25
3.3 ALTERNATIVE LAYOUTS	28
3.4 THE MASTER PLAN	32
<u>CHAPTER FOUR - BUILDING DESIGN</u>	33
4.1 DESIGN METHOD	33
4.2 OUTPATIENT DEPARTMENT AND MEDICAL SERVICES	35
4.3 ADMINISTRATIVE OFFICES	48
4.4 SURGICAL DEPARTMENT	50
4.5 INPATIENT DEPARTMENT	63
4.6 MORTUARY	77
4.7 ANCILLARY SERVICES	78
4.8 HOUSING	82
<u>CHAPTER FIVE - BUILDING CONSTRUCTION</u>	83
5.1 BUILDING METHOD	83
5.2 CONSTRUCTION AND MATERIALS	85
5.3 MAINTENANCE AND IMPROVEMENT	95
5.4 LABOUR AND SELF-HELP	97
5.5 CLIMATE	98
5.6 CONSTRUCTION EXAMPLES	100
<u>CHAPTER SIX - BUILDING SERVICES</u>	105
6.1 WATER SUPPLY	105
6.2 WASTE DISPOSAL	111
<u>CHAPTER SEVEN - CONTRACT PLANNING</u>	117
7.1 CONTRACT DOCUMENTS	117
7.2 TENDERING	125
7.3 APPROVALS	127
7.4 SITE SUPERVISION	127
7.5 COMPLETION AND HANDOVER	130

## INTRODUCTION

This manual contains design, construction and cost guidelines for the building and extension or improvement of medical facilities. It has been prepared primarily for the doctor and his staff who, in rural Africa, must often be their own architects. It may also be of value to the architect who, perhaps for the first time in his career, is confronted with the special problems associated with the provision of medical buildings in rural areas. Furthermore, it provides information which could be useful to people who are engaged in raising funds and allocating money for medical purposes in developing countries.

The manual concentrates on the rural hospital which is a reasonably well defined and familiar element in most health systems and which exemplifies many of the functions found in medical buildings both higher and lower in the health care chain. The principles and guidelines herein are considered equally relevant to the design of health centres and dispensaries or to smaller district hospitals.

Hospital buildings at present tend to be excessively expensive, consuming funds which are sorely needed in other areas such as the primary health sector. The guiding principle in this manual is that, for medical buildings, the expenditure of material, monetary and manpower resources should be reduced to the lowest level consistent with adequate and acceptable medical care.

The full range of architectural activity, from initial feasibility study to supervision of the work on site, is covered, the emphasis being that each building problem requires its own solution according to local needs and benefitting from the use of local materials and skills. To this end a considerable amount of space has been devoted to explaining how buildings can be designed from scratch. Where plans are shown they are intended only to illustrate the design principles involved and not as prototype solutions to be applied indiscriminately.

The material in this manual is based primarily upon a study made over a 12-month period by the authors, of some 15 hospitals and health centres in different regions of Kenya and Tanzania. At each place a detailed physical and functional survey was made and discussions with staff recorded. Existing documentation on the subject has been drawn upon as well as the collective experience of the Housing Research and Development Unit in architectural matters and the African Medical and Research Foundation in medical matters.

The recommendations and guidelines contained in this manual do not necessarily reflect either medical or building regulations in force at a particular time. In live situations these regulations may have considerable effect on such items as accommodation requirements and space and construction standards. One of the consequences of this is that, in actual building projects, costs will tend to rise above the levels indicated herein.

**INCEPTION:** State the aim of the project - outline the accommodation required - assess financial, material and personnel resources.

**FEASIBILITY:** Outline responsibilities - determine whether new building is needed - appoint an architect if possible - make detailed list of accommodation - prepare a provisional cost estimate - draw up a program - evaluate, select and survey the site - contact relevant authorities.

ESTABLISH THE FEASIBILITY AND PROCEED WITH THE DESIGN

**SKETCH DESIGN:** Make a diagrammatic plan of the main elements - prepare alternative designs related to the site - select suitable design and show main dimensions, allocation of space and building materials.

**DETAIL DESIGN:** Design each room and fix sizes - decide on construction method and all materials - show position of furniture and equipment - prepare and agree final design drawings - make new cost estimate - obtain outline approval of relevant authorities.

THE DESIGN SHOULD NOT BE CHANGED AFTER THIS POINT

**WORKING DRAWINGS:** Make accurate drawings giving all information needed to construct the works - select all fittings, fixtures and equipment - obtain quotes for special items - obtain building regulations approval.

**BILL OF QUANTITIES:** List all materials and items to be used and their quantities - make final cost estimate - order long-delivery materials - initiate site clearance.

**TENDERING:** Make short list of contractors - issue working drawings, bill of quantities and contract conditions to selected contractors - scrutinize tenders and select the best - make any changes required for cost reasons - sign the contract - nominate subcontractors.

CHANGES BEYOND THIS STAGE WILL COST EXTRA TIME AND MONEY

**SITE WORK:** Agree contractors program - supervise work on site - hold 2-weekly progress meetings with contractor - make interim payments.

**PRACTICAL COMPLETION:** Inspect the work and make list of defects - hold hand-over meeting and accept keys from the contractor.

**FINAL COMPLETION:** Inspect the works and check that the defects are made good - settle final account by releasing the retention sum.